REMARKS

35 USC §103

Claims 1-2, 6 and 8-9 are rejected under 35 USC §103(a) as being unpatentable over Miller et al (US 5965945).

Claim 3 is rejected under 35 USC 103(a) as being unpatentable over Miller in view of Schrock (US 6221691).

Claims 4-5 are rejected under 35 USC 103(a) as being unpatentable over Miller in view of Andricacos et al. (US 6224690).

Claim 7 is rejected under 35 USC 103(a) as being unpatentable over Miller in view of Iwasaki (US 6777814)

The Applicant respectfully agrees, especially in view of the amendments presented herein.

Claim 1 recites:

"A semiconductor package comprising a lead-free solder having an alpha flux of less than 0.0005 cts/cm^2/hr."

The Miller reference only refers to lead-based solders, and as a matter of fact, the Miller reference makes it clear that "improved solder bump compositions....advantageously employ a thin low-alpha layer of lead deposited in close proximity to the alpha particle sensitive devices. (see Summary of the Invention Section). The entire Miller reference is dedicated to flip chips that contain lead layers.

The current application points out on page 12 of the specification that the methodologies disclosed therein can be utilized for purifying materials associated with lead-free solders. In addition, the current application states that it is frequently and

incorrectly assumed that lead-free solders do not have alpha emitters or have low levels of alpha emitters. As a matter of fact, lead-free solders having low alpha flux is something that is both desirable and elusive in conventional applications.

Therefore, claims 1-3 and 7-9 are allowable as being patentable over Miller alone and in view of Schrock and Iwasaki, because none of these references disclose, teach or suggest lead-free solders having reduced alpha fluxes.

The Applicant will separately address the Andracacos reference, since the Examiner believes the combination of Andracacos and Miller preclude the patentability of a lead-free solder with reduced alpha flux levels. This combination is an improper hindsight combination and should be reconsidered by the Examiner.

The Federal Circuit has stated that "[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." (See In re Geiger, 815 F.2d 686, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). The Patent Office applies the same standard. "When the incentive to combine the teachings of the references is not readily apparent, it is the duty of the examiner to explain why combination of the reference teachings is proper...Absent such reasons or incentives, the teachings of the references are not combinable." (See Ex parte Skinner, 2 USPQ2d 1788, 1790 (BPAI 1986). The Federal Circuit crystallizes this concept by the following ruling:

> "It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that '[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." (See In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) (quoting In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988)).

Close adherence to this standard is especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against the teacher." (See In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)(citing W. L. Gore & Assocs. v. Garlock, inc., 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U./S. 851 (1984). In addition, a general relationship between fields of the prior art patents to be combined is insufficient to establish the suggestion or motivation. (See Interactive Techs., Inc. v. Pittway Corp., Civ. App. No.: 98-1464, slip op. at 13 (Fed. Cir. June 1, 1999)(unpublished), cert. denied, 528 U.S. 1046 (1999). As stated by the Federal Circuit:

> "The genius of invention is often a combination of known elements which in hindsight seems preordained. To prevent hindsight invalidation of patent claims, the law requires some "teaching, suggestion or reason" to combine cited references... When the art in question is relatively simple, as is the case here, the opportunity to judge by hindsight is particularly tempting. Consequently, the tests of whether to combine references need to be applied rigorously." (McGinley v. Franklin Sports Inc., 262 F.3d 1339, 60 USPQ2d 1001, 1008 (Fed, Cir. 2001)(citing Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997)).

Failure of the Examiner to provide the necessary suggestion or motivation will create a presumption that the combination of references selected by the Examiner to support the obviousness rejection was based on hindsight. (Irah H. Donner, *Patent Prosecution, Practice & Procedure Before the U.S. Patent Office*, Third Edition) In this case, the Examiner improperly combines Miller and Andricacos, because the Examiner states in the current Office Action (page 3) that "Andricacos et al. disclose a semiconductor package comprising a solder predominately comprises Sn or the solder is substantially lead-free". The Examiner provides absolutely no teaching, suggestion or motivation in Andricacos that

would lead one of ordinary skill in the art to consider that these lead-free solders have alpha emitters and that those emitters need to be reduced or eliminated. Since Miller only covers lead-based solders, there is no teaching in Miller that leads one to believe that one would want to use "lead free solders" in an otherwise lead-based solder application. Therefore, the Examiner has improperly combined these references using hindsight to arrive at the novel and non-obvious teachings of the current application.

The Applicant respectfully requests the Examiner to reconsider the citation of the Andricacos reference and respectfully requests that the Examiner allow claims 1-4 and 7-9 as allowable over the remaining references, alone or in combination.

CANCELLATION OF "LEAD BASED" SOLDER CLAIMS

The Applicant notes for the record that although lead-based solders were removed from consideration of claim 1 and the other dependent claims, that this deletion was in no way directed to removing that option to get around the cited references. The Applicant fully intends to present lead-based solder claims in a divisional application; however, the Applicant believes that prosecution on the lead-free solders can be expedited by breaking the two solder types in to two distinct sets of claims. Therefore, this action should not be seen as limiting the enforceability of later claims under the Doctrine of Equivalents or any other related limitation.

REQUEST FOR ALLOWANCE

Claims 1-4 and 7-9 are pending in this application, and the Applicant respectfully requests that the Examiner reconsider all of the claims in light of the arguments presented and allow all current and pending claims.

Respectfully submitted,
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